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First record of *Parvalona parva* (Daday, 1905) (Crustacea: Anomopoda: Chydoridae) from Colombia

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Abstract: The cladoceran *Parvalona parva* (Daday, 1905) (Anomopoda: Chydoridae) was found associated with the aquatic macrophyte *Eichhornia crassipes* (Mart.) Solms in Ciénaga de Chilloa-Magdalena Department, Colombia. It represents the first record of this species in Colombia and this species' range is extended to northern South America. A brief descriptions of this taxon based on Colombian material is given.

Key words: Cladocera, Colombia, Neotropics, taxonomy, *Parvalona*

The efforts in the different studies on the Cladocera biodiversity in Colombia (Fuentes-Reinés et al. 2012; Fuentes-Reinés and Zoppi de Roa 2013; Kotov and Fuentes-Reinés 2014) led to the finding of a single population of a relatively rare Neotropical species, *Parvalona parva* (Daday, 1905). It was described originally from Paraguay (Daday 1905) as *Leydigia parva, s*ubsequently placed in the genus *Leydigia* Kurz, 1875 based on the characteristic traits of its postabdomen, then moved to *Alona* Baird, 1843 (Smirnov 1971). Nevertheless, owing to the different characters of *L. parva* with the genus *Leydiga,* Van Damme et al. (2005) created the genus *Parvalona* to allocate this species.

Parvalona parva is considered the sole species of the genus, and it has an exclusively Neotropical distribution (Kotov et al. 2013). In South America, its occurrence has been previously reported from Paraguay and Brazil (Daday 1905; Van Damme et al. 2005; Elmoor-Loureiro et al. 2009; Van Damme and Dumont 2010). Nevertheless, Van Damme et al. (2005) and Elmoor-Loureiro et al. (2009) concluded that Daday's (1905) location was erroneously placed to Brazil, and in reality it is located in Argentina, and this species is present in Colombia also.

The aim of this paper is to report on the first record of *P. parva* for Colombia, which expands this species' distributional range, and also to present a brief description of the specimens from this country and South America.

Samples were taken from vegetation zone of Ciénaga de Chilloa (09°09′00″ N, 074°04′00″ W), Magdalena Department in June 2004. Water samples were collected using a bucket of 65 L. Samples were filtered with through a standard zooplankton net (45 µm mesh) and fixed in 96% ethanol. The specimens were dissected and the taxonomically relevant appendages were mounted in semi-permanent slides. These slides were deposited in the Museum de Colecciones Biológicas of the Universidad Del Atlántico, Barranquilla-Atlántico, Colombia (UARC215M-UARC220M). Drawings of the mounted appendages were prepared with a camera lucida and also photographed using a Kodak Easy Share C140 digital camera adapted to a compound microscope. The specimens were measured in lateral position, from the head to the posterior part of the valves. Identification was according to Van Damme et al. (2005) and Elmoor-Loureiro et al. (2009).

The studied specimens (three adult females and a single juvenile) fully agreed with the descriptions of Van Damme et al. (2005) and Elmoor-Loureiro et al. (2009).

Parvalona parva can be easily recognized by its important diagnostic characters such us: 1) a remarkably wide postabdomen; 2) denticles on anterior outer portion of trunk limb I; 3) limb III with five setae on the exopodite. These distinctive traits are also characteristic for the specimen from Colombia.

General shape oval (Figure 1A), body length from head to posterior part of valve was 438 µm. Maximum height in posterior half, height/length = about 0.67 in adults (Figure. 1A), and about 0.70 in the juvenile (Figure 1B), rostrum short and relatively blunt, eye and ocellus of similar size, distance from tip of rostrum to ocellus somewhat larger than between ocellus and eye (Figure 1C). Head shield wide, PP = 1.5–1.6 (Figures 1D-E), the central major pore is the smallest (Figure 1F), labral keel trapezium-shaped, without any setulation (Figure 1G), antenna I not reaching tip of rostrum, antennular sensory seta slender, arising at distance of about one-third of appendage length from distal end (Figure 2A),

antenna II with setal formula 1-1-3/0-0-3 (Figure 2B), mandibles are asymmetrical and elongated, their distal ends (mandibular surfaces) bear small ridges (Figures 2C–D). Postabdomen remarkably wide, length/wide ratio about 2.3, distal portion with six large denticles (Figures 2E–F), postabdominal claw about 1.25 of anus length, numerous fascicles of lateral setules (13–14) on proximal half of postanal (Figure 3A), the distalmost of each group being the largest and thicker than the others (Figure 3B). Outer distal lobe (ODL) and inner distal lobe (IDL) of limb I with one and two setae respectively, ODL with seta shorter than inner setae of IDL and a rudiment of the second seta (Figure 3C), anterior outer portion of limb I with a corm bearing long, slender denticles (Figures 3D–E). Limb II with exopodite as a subovoide lobe, inner-distal limb portion with scrapers 1–4 (numeration according to Kotov, 1999) and 6–8 decreasing in size, scraper 5 longer than 4 (Figure 3F);

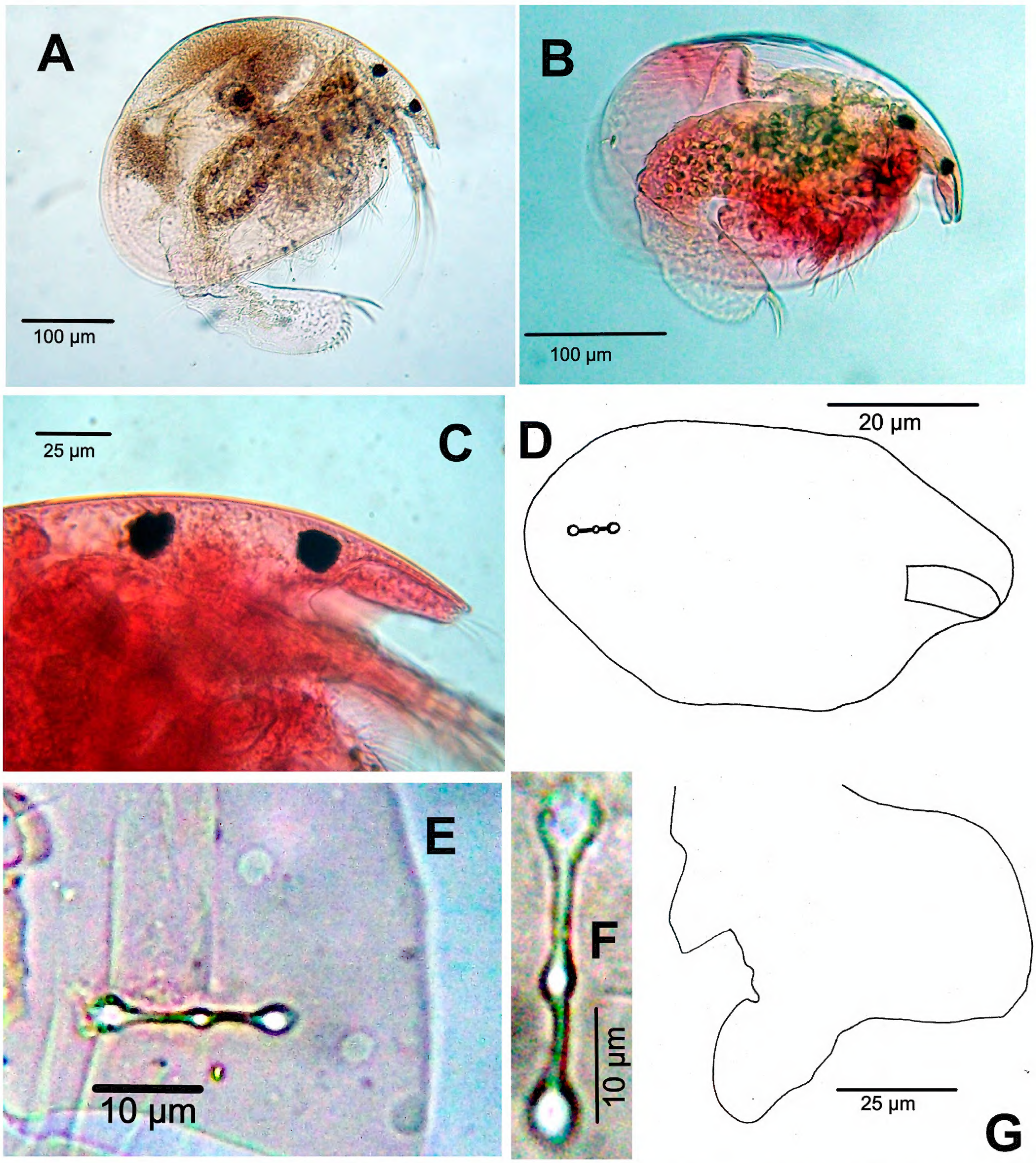

Figure 1. *Parvalona parva*, parthenogenetic female from Ciénaga de Chilloa, Colombia. **A**: Adult. **B**: Juvenile. **C**: Rostrum of adult. **D**: Head shield. **E–F**: Head pores. **G**: Labrum.

distal armature of gnathobase with three elements, filter plate with six setae. Limb III with exopodite flat bearing five setae, distal endite (terminology according to Kotov, 1999) armed with three stiff setae (Figures 4A-B). Limbs IV–V: undistinguishable from description of Van Damme et al. (2005). Exopodites of limbs IV–V with four and six setae respectively (Figures 4C–D).

Variability (three females analyzed, mean length = 438 µm). The filter plate of gnathobase of one female was observed to possess seven instead of six setae (Figure 3G).

Ecology. In the surveyed area, *P. parva* was found among vegetation (*Eichhornia crassipes* (Mart.) Solms). This small (surface area of 11.25 km^2) lagoon system (Ciénaga) is a shallow water body (depth 0.7 m), whose temperature varies over the seasons in the range of 30–35°C; pH values during sampling was 8, conductivity 133 µS·cm^{-1}, and solid total 67 ppm. *Parvilona parva* was found also associated with the aquatic macrophytes

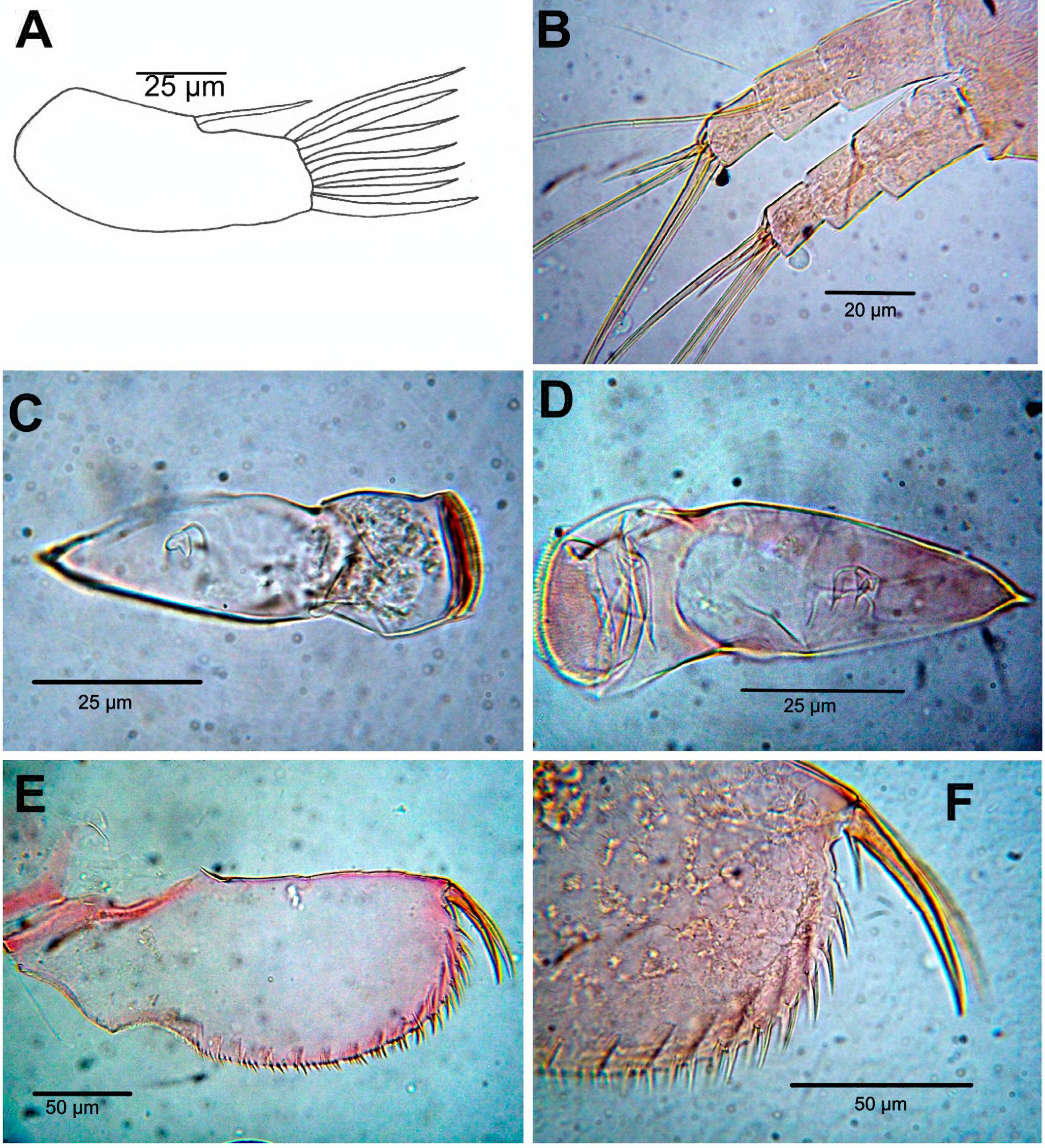

Figure 2. *Parvalona parva*, parthenogenetic female from Ciénaga de Chilloa, Colombia. Parthenogenetic female. **A**: Antenna I. **B**: Antenna II. **C–D:** Mandible. **E**: Postabdomen. **F**: Idem, distal portion.

Eichhornia crassipes and according to Van Damme et al. (2005).

The specimen from Colombia bears agree with descriptions by Van Damme et al. (2005); however, Colombian specimens possess denticles on anterior outer portion of trunk limb I corm more slender and longer (Figures 3D–E). Similar morphology was reported by Elmoor-Loureiro et al. (2009: Figure 16)

The genus *Parvalona* is fully differentiated with the genus *Leydigia* s. str. (Van Damme et al. 2005). Other character that separate *P. parva* from the species of *Leydigia* is the postpore distance (PP), which is shorter in *P. parva* (1.5–1.6) than in the species of *Leydigia* (from 2 *L. propinqua* to 10 in *Leydigia acanthocercoides*).

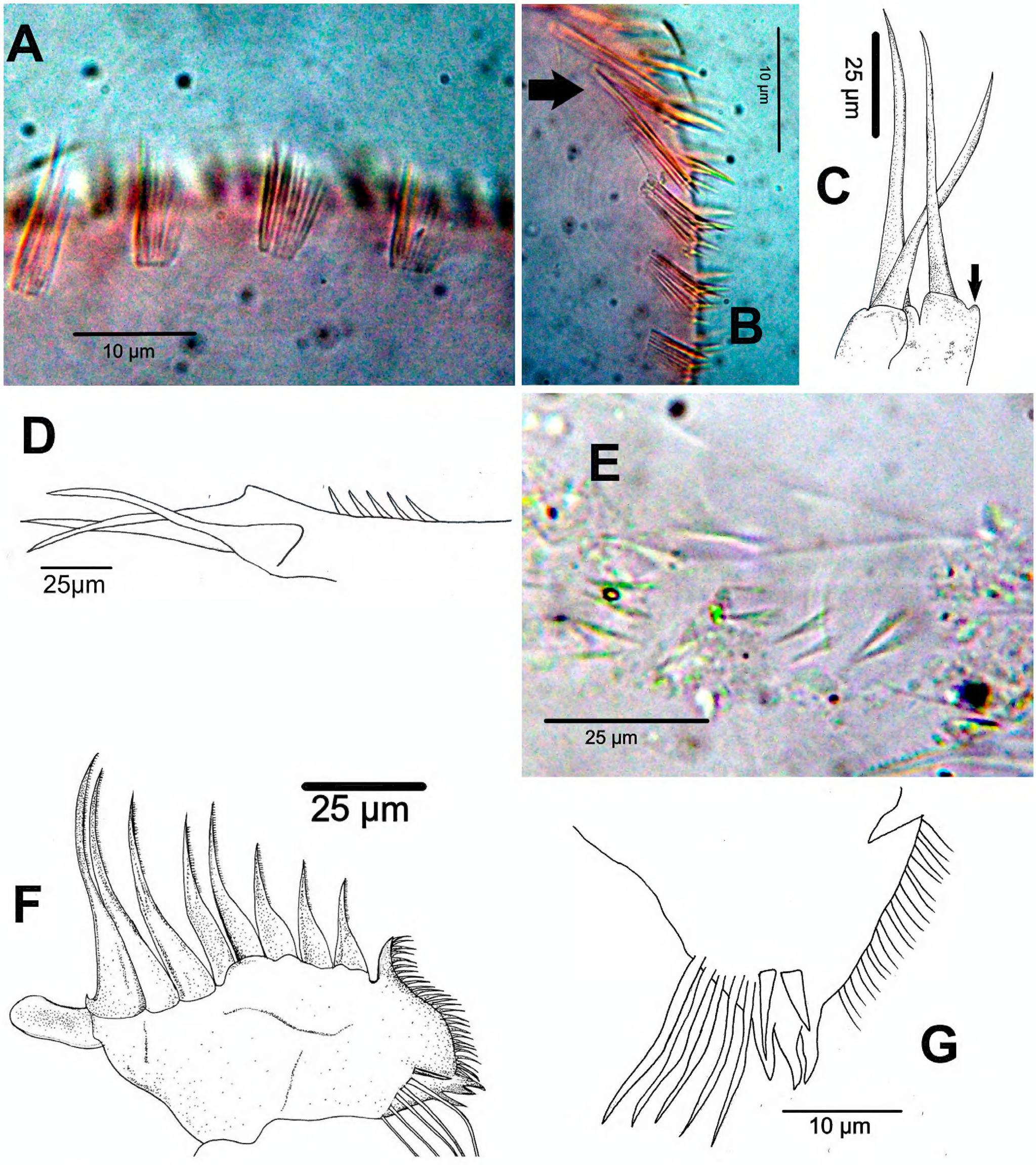

Figure 3. *Parvalona parva*, parthenogenetic female from Ciénaga de Chilloa, Colombia. Parthenogenetic female. **A**: Lateral fascicle of postabdomen. **B**: Fascicle on distal part of postabdomen (the arrow points at the fascicles). **C**: Outer distal lobe and inner distal lobe of Limb I. **D–E**: Denticles Anterior outer portion of trunk limb I corm. **F**: Limb II. **G**: Filter plate of gnathobase of limb II.

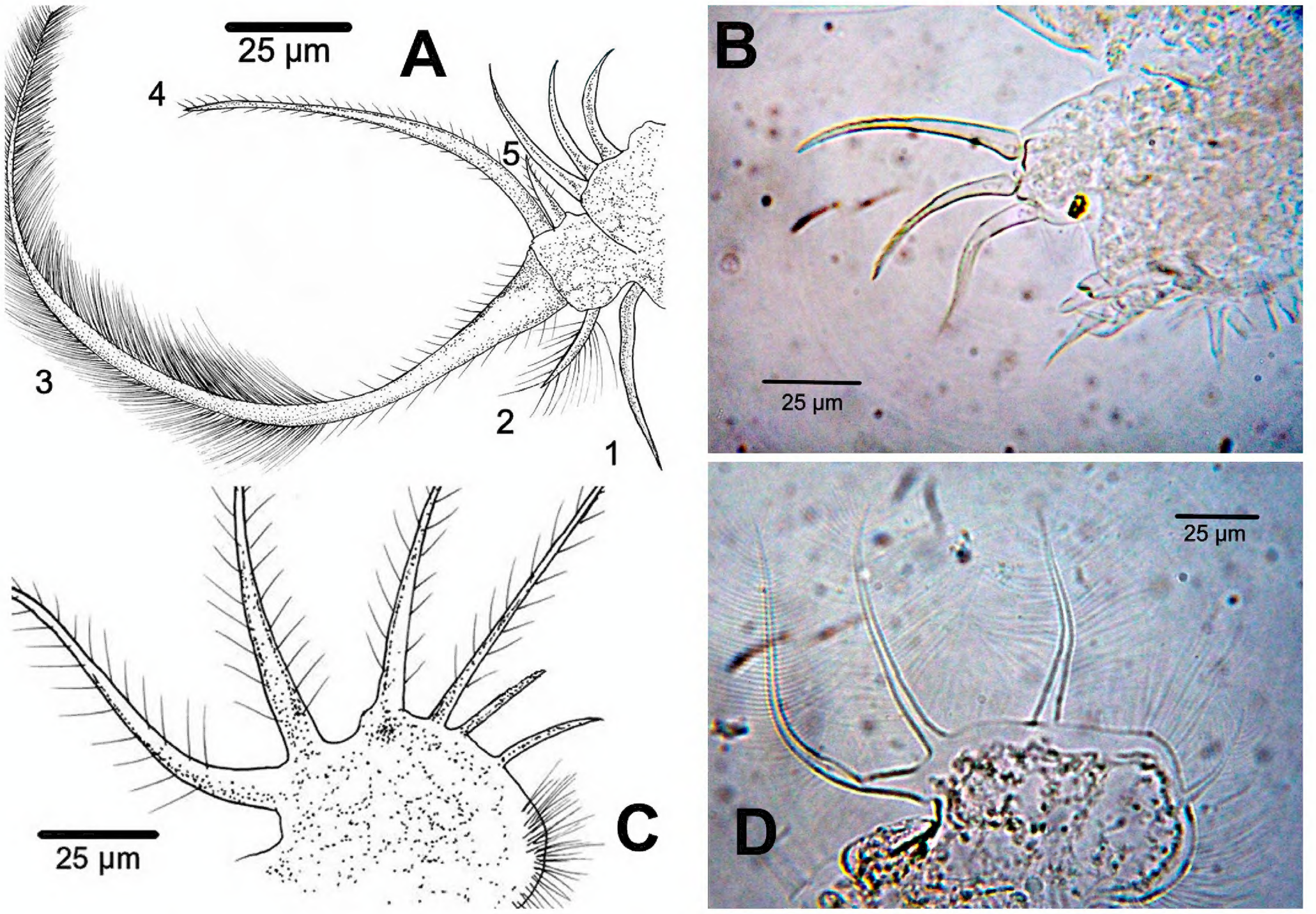

Figure 4. *Parvalona parva*, parthenogenetic female from Ciénaga de Chilloa, Colombia. Parthenogenetic female. **A**: Limb III. **B**: Idem, inner portion. **C**: Exopodite of Limb IV. **D**: Exopodte of Limb V.

The presence of *P. parva* could be expanded to the nearby waters, so its wider distribution in the Colombian waters might be also expected. In general, the cladocerans in Colombia and the Neotropics in toto need more attention from hydrobiologists.

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